

CLAIMS

1. A coil component comprising:

prismatic base body (1);

5 coil section (3) formed of a copper plated layer spirally formed on an outer periphery of a longitudinal side surface of the base body;

exterior section (8) for covering the coil section; and

electrode section (9) formed on an end surface in a lateral part of the base body and connected to the coil section,

10 wherein

the coil section is formed by grooving the copper plated layer previously formed on an entire side surface of the base body and removing the copper plated layer from the groove, and

the exterior section includes alternately stacked first resin
15 layers and second resin layers.

2. The coil component according to claim 1, wherein

the first resin layer contains liquid epoxy resin, aluminum hydroxide, silica, reactive diluents, and

20 second resin layer contains powder epoxy resin, curing agent, mica, carbon, and silica.

3. The coil component according to claim 1,

wherein the exterior section is formed by alternately stacking the
25 uncured first resin layers and the uncured second resin layers and curing the first and second resin layers.

4. The coil component according to claim 1,

wherein the first resin layer is adjacent to the copper plated layer and the second resin layer is the outermost layer in the exterior section.

5 5. The coil component according to claim 1, further comprising the first resin layer only in the groove,

wherein the coil section is flattened by filling the groove with the first resin layer.

10 6. The coil component according to claim 1, further comprising an insulating coating between the copper plated layer of the coil section and the first resin layer.

15 7. The coil component according to claim 1, further comprising the copper plated layer on an end surface of a lateral part of the base body,

wherein the electrode section formed on the copper plated layer includes a conductive resin layer, a nickel plated layer, and a tin plated layer.

8. A manufacturing method of a coil component comprising:

20 forming a copper plated layer on an entire outer periphery of a prismatic base body;

forming a coil section including a linear section and a groove by spirally grooving the copper plated layer formed on the outer periphery of a longitudinal part of the base body;

25 forming an exterior section on the coil section; and

forming an electrode section on the copper plated layer formed on an end surface of a lateral part of the base body,

wherein the forming step of the exterior section alternately comprises steps of forming an uncured first resin layer on the coil section and steps of forming an uncured second resin layer on the coil section.

5 9. The manufacturing method according to claim 8, wherein

the uncured first resin layer is made of first composition of liquid epoxy resin containing no curing agent, aluminum hydroxide, silica, reactive diluents, and isopropyl alcohol, and

10 the uncured second resin layer is made of second composition of powder epoxy resin, curing agent, mica, carbon, and silica.

10. The manufacturing method according to claim 8, wherein

the step of forming the exterior section includes a step of forming a first resin layer, and

15 in the step of forming the first resin layer, a plurality of micro iron balls onto which the uncured first resin layer is adhered are collided with the base body having the coil section, and the uncured first resin layer adhered onto the micro iron balls is transferred to the base body.

20 11. The manufacturing method according to claim 8, wherein

the step of forming the exterior section includes a step of forming a second resin layer, and

25 in the step of forming the second resin layer, a plurality of micro iron balls are collided with the base body having the coil section, and the powder resin is pressed between surfaces of the micro iron balls and the base body to adhere the uncured second resin layer to the base body, in a vessel containing the second composition.

12. The manufacturing method according to claim 10, wherein

the step of forming the exterior section includes a step of forming a second resin layer after the step of forming the first resin layer, and

5 in the step of forming the second resin layer, a plurality of micro iron balls are collided with the base body, and the uncured second resin layer is adhered to a surface of the base body having the uncured first resin layer, in a vessel containing the second composition.

10 13. The manufacturing method according to claim 12, wherein

the step of forming the exterior section further includes a step of curing resin, and

in the step of curing resin, the step of forming the first resin layer and the step of forming the second resin layer are alternately repeated at a
15 plurality of times, and the base body is then floated in an air, dried, and heat-cured.

14. The manufacturing method according to claim 12, wherein

the step of forming the exterior section further includes a step of
20 curing resin, and

in the step of curing resin, the step of forming the first resin layer and the step of forming the second resin layer are alternately repeated at a plurality of times, and the base body is disposed in a hole guide formed on a sheet impregnated with fluorocarbon resin, dried, and heat-cured.

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15. The manufacturing method according to claim 8,

wherein the step of forming the exterior section includes the step of

forming the first resin layer firstly and the step of forming the second resin layer finally.

16. The manufacturing method according to claim 8,

5 wherein the step of forming the exterior section further includes a step of previously forming the second resin layer only in the groove.

17. The manufacturing method according to claim 8, further comprising a step of forming an insulating coating layer between the copper plated layer
10 formed on the outer periphery of the longitudinal part of the base body and the exterior section, the step of forming the insulating coating layer being performed between the step of forming the coil section and the step of forming the exterior section.

15 18. The manufacturing method according to claim 9, further comprising a step of blending and dispersing the first composition using ultrasonic wave.

19. The manufacturing method according to claim 8,

 wherein the step of forming the electrode section includes a step of
20 forming a conductive resin layer, a step of nickel plating, and a step of tin plating.